



**Fisheries and Oceans
Canada**



Small Craft Harbours

Stone production – Lower North Shore

Project n° 721181

File No. FP802-150160

Specifications for bid



October 2015

SECTION	SUBJECT	NUMBER OF PAGES
DIVISION 1		
01 11 01	Summary of work	2
01 29 00	Measurement for payment	2
01 29 83	Payment Procedures: Testing Laboratory Services	2
01 32 16.07	Construction Progress Schedules - Bar (Gantt) Charts	4
01 33 00	Submittal Procedures	5
01 35 29.06	Health and Safety	7
01 35 43	Environmental Procedures	3
01 41 00	Regulatory requirement.....	2
01 45 00	Quality Control.....	3
01 77 00	Closeout Procedures.....	1
01 78 00	Closeout Submittals	2
DIVISION 35		
35 31 24	Stone production	13

PART 1- GENERAL

<u>1.1 RELATED SECTION</u>	.1	n/a
<u>1.2 WORK COVERED BY CONTRACT DOCUMENTS</u>	.1	Work of this contract involves the production of stone of different sizes for the construction of artificial reefs on the lower north shore and the construction of a breakwater. The works of this contract do not include the construction of reefs nor a breakwater.
	.2	Work includes mainly, without limitation: .1 Production of 100-750 mm stone. .2 Production of 4-6 metric tons stone. .3 Production of 2-3 metric tons stone .4 Transport and storage of stone in Kegaska.
<u>1.3 CONTRACTOR'S USE OF THE PREMISES</u>	.1	Contractor's use of the premises is limited to such areas as required to carry out the work, including access.
	.2	Contractor is responsible for all activities in the quarry.
	.3	Contractor is responsible of storage site and stones until October 2016.
	.4	When works are finished, all stone will be owned by the Department, but Contractor will be responsible of stones until October 2016.
<u>1.4 METRIC UNITS</u>	.1	Units of the International Metric System (S.I.) are exclusively used in the plans and specifications of this project.
<u>1.5 DOCUMENTS REQUIRED</u>	.1	Maintain at job site one copy of each of the following documents: .1 Specifications.
<u>1.6 PROJECT RECORD DOCUMENTS AND SAMPLES</u>	.1	Maintain at job site for Departmental Representative's perusal one record copy of: .1 Specifications. .2 Field test records.
	.2	Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.3 Keep record documents and samples available for inspection by Departmental Representative.

1.7 RECORDING ACTUAL
SITE CONDITIONS

.1 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.2 Other Documents: retain and file manufacturer's certifications, inspection certifications, field test records.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

End of section

PART 1 - GENERAL

1.1 METHOD OF
MEASUREMENT

.1 Unless otherwise indicated, the provision of materials, labour, tooling, equipment, protection, transportation, administration costs, mark-up and financing, etc., required to execute the work of this contract are included in the following schedules.

.2 The Contractor shall provide, no later than ten (10) days after notification of the Instruction to Proceed, the detailed breakdown of each item measured as an inclusive (global) unit.

.3 The measurement method used for the unit price items in the price schedule shall be as follows :

.1 Item n° 1 – Production and transport of stone for reefs :

This item is paid per unit produced and delivered and includes all costs related to the production and transportation of different sizes of stone for reefs. This item is broken down as following:

- 1.1 100-200 mm stone
- 1.2 200-400 mm stone
- 1.3 400-750 mm stone

2 Item n° 2 - Storage of reef stone :

This item is paid per month unit and includes all costs related to storage of reef stone in Kegaska on an appropriate and approved site by Department at a maximum distance of 3 km from harbour. This item will be paid for every month between delivery of stone and its recovery. Agreements must be taken for storage until at least November 2016. No additional fee must be on the charge of the Department if recovery of stone occurs before that scheduled date.

.3 Item n° 3 – Production and transport of armour stone: This item is paid per unit produced and delivered and includes all costs related to the supply and transportation of armour stone for breakwater. This item is broken down as following:

- 3.1 4-6 tm
- 3.2 2-3 tm

.4 Item n° 4 - Storage of armour stone:

This item is paid per month unit and includes all costs related to storage of reef stone in Kegaska on an appropriate and approved site by Department at a maximum distance of 3 km from the harbour. This item will be paid for every month of storage between delivery of stone and its recovery by Department. Agreements must be taken for storage until at least November 2016. No

additional fee must be on the charge of the Department if recovery of stone occurs before that scheduled date.

End of section

PART 1 - GENERAL

1.1 RELATED
REQUIREMENTS
SPECIFIED ELSEWHERE

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified elsewhere, under various sections.

1.2 APPOINTMENT AND
PAYMENT

- .1 The Departmental Representative will appoint and pay for services of testing laboratory except as follows:
 - .1 Inspections and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspections and testing performed exclusively for Contractor's convenience.
 - .3 Mill tests and certificates of compliance.
 - .4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
 - .5 Additional tests indicated below.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.3 CONTRACTOR'S
RESPONSIBILITIES

- .1 Provide labour and facilities to:
 - .1 provide access to Work for inspection and testing.
 - .2 facilitate inspections and tests.
 - .3 make good Work disturbed by inspection and test.
 - .4 provide storages on site for laboratory's exclusive use to store equipment and cure test sample.
- .2 Notify the Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
 - .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
 - .3 Baseline: original approved plan (for project, work package, or activity), taking into account any approved scope changes.
 - .4 Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
 - .5 Durations: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
 - .6 Master Plans: summary-level schedule that identifies major activities and key milestones.
 - .7 Milestone: significant event in project, usually completion of major product (deliverable).
 - .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to meet Project milestones. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
 - .9 Project Planning, Monitoring and Control System: overall system operated by Contractor to enable monitoring of project work in relation to established milestones or stages.
-

1.2 REQUIREMENTS

- .1 The Contractor shall undertake construction as soon as contract award is confirmed
- .2 Works shall be completed by May^{31st} 2016 at the latest.
- .3 Ensure that planning and implementation schedule are workable with respect to contract duration.
- .4 Planning and scheduling shall provide action and results as required by the prescribed milestones and time frame.
- .5 Break down activities to shorter segments to allow for progress reporting.
- .6 The award of contract or the work inception date, the rate of progress, the issuance of the Interim Certificate and that of the Final Certificate are definite project steps or phases and are of essence of this contract.
- .7 The construction schedule and the bar (GANTT) diagram shall take into account the work restrictions described in section 01 35 43 (Environmental procedures).

1.3 SUBMITTALS

- .1 Submit to Departmental Representative within 15 working days of Award of Contract a first Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .2 Submit Project Schedule to Departmental Representative within ten (10) working days of receipt of acceptance of Master Plan.

1.4 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Where schedule is deemed impractical, revise and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 The Contractor is responsible for the information required to prepare the construction project schedule. Provide

Departmental Representative with the information concerning operations, work sequences, breakdown of work into activities, and duration of such activities.

- .3 Construction schedules shall be submitted for review to the Departmental Representative who may require further information where the outlook seems unrealistic or concerning completion dates.
- .4 Approval of the construction schedules by the Departmental Representative does not relieve Contractor of his obligation to perform the work as required in the contract documents. Acceptance of the Contractor's schedules by the Departmental Representative (DR) does not make the DR responsible for any cost overrun or calendar run-over resulting from delays in the calendar-dated schedules.
- .5 The project schedule—construction schedules and updates—shall be submitted to the Departmental Representative for review along with each request for payment and is conditional to the processing of such request for payment.
- .6 The Departmental Representative and the Contractor are to review jointly the updated project schedule at each progress meeting. The Contractor shall update the schedule with the modifications as discussed during progress meetings.
- .7 Where target dates are not met, the Contractor shall take any of the following actions at no extra cost to the Departmental Representative: increase his workforce, increase working hours, or take any such action required to make up for the delays.
- .8 The detailed project schedule shall include the steps that add up to the following activities:
 - .1 Contract award.
 - .2 Shop drawings, samples.
 - .3 Permits, authorizations.
 - .4 Mobilization.
 - .5 Excavation.
 - .6 Backfilling.
 - .7 Lighting.
 - .8 Electrical power.
 - .9 Testing and commissioning.

1.6 PROJECT SCHEDULE
REPORTING

- .1 Update Project Schedule on a two-week basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of the updated Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining

problem areas, anticipated delays and impact, and possible mitigation.

1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

End of section

PART 1 - GENERAL

1.1 RELATED SECTION

.1 Section 01 45 00 – Quality Control

1.2 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items are not fabricated in SI Metric units or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittals and Contractor shall submit complete and adequate documents.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review and Contractor shall submit documents to contract requirements.

.10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS
AND TECHNICAL DATA
SHEETS

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Québec, Canada.
- .3 Shop drawings shall indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to the specifications and design package drawings.
- .4 Allow 10 days for Departmental Representative review of each submission.
- .5 Adjustments made on shop drawings by the Departmental Representative are not expected to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identifications and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Preparation dates and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractors.
 - .2 Suppliers.
 - .3 Manufacturers.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

- .5 Details of appropriate portions of Work as applicable:
 - .1 Materials and details of fabrications.
 - .2 Layouts, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Performance characteristics.
 - .5 Reference standards.

 - .9 After Departmental Representative's review, distribute copies of shop drawings and technical data sheets.

 - .10 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

 - .11 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

 - .12 Submit one (1) electronic copy and two (2) hard copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accordance with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.

 - .13 Submit one (1) electronic copy and two (2) hard copies of certificates for requirements requested in specification Sections and as requested by the Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible official of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.

 - .14 Submit one (1) electronic copy and two (2) hard copies of manufacturer's instructions for requirements requested in specification Sections and as requested by the Departmental Representative.
 - .1 Material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety measures to be implemented.
-

- .15 Submit one (1) electronic copy and two (2) hard copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by the Departmental Representative.
.1 Report documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance of products, materials, equipment and systems with manufacturer's standards or instructions.
- .16 Submit one (1) electronic copy and two (2) hard copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by the Departmental Representative.
- .17 Delete information which not applicable to Work project.
- .18 Supplement standard information and provide details applicable to Work project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, shop drawings will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 The review of shop drawings by DFO is for sole purpose of ascertaining conformance with general concept borne in data therein indicated.
.1 This review shall not mean that the Department approves detail design package inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or techniques of construction and installation and for co-ordination of Work of all trades.

1.4 PRODUCT SAMPLES

- .1 Submit for review samples in duplicate (2) as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative site office.
-

	.3	Notify the Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
	.4	Where colour, pattern or texture is criterion, submit full range of samples.
	.5	Adjustments made on samples by Departmental Representative are not expected to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
	.6	Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
	.7	Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.
<u>1.5 MOCK-UPS</u>	.1	Erect mock-ups in accordance with 01 45 00 (Quality Control).
<u>1.6 AGREEMENTS</u>	.1	Submit arrangements for stone storage, which must be valid until November 2016. These agreements will be monthly and will commit no additional expense for the Department if the agreement were to be terminated before the scheduled date.
<u>1.7 CERTIFICATES AND TRANSCRIPTS</u>	.1	Immediately after award of Contract, submit required documents to relevant Workers' Compensation Board.
<u>PART 2 - PRODUCTS</u>		
<u>2.1 NOT USED</u>	.1	Not Used.
<u>PART 3 - EXECUTION</u>		
<u>3.1 NOT USED</u>	.1	Not Used.
		End of section

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 This section governs the management of transport and storage activities required to ensure that the health and safety of the public and work site personnel, including environmental protection, are at all times given precedence over project cost or schedule considerations. For the purpose of this project, the work site defines as the storage area for stones.

1.2 REFERENCES

- .1 Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA).
- .3 Workplace Hazardous Materials Information System (WHMIS)/health Canada.
 - .1 Material safety data sheet (MSDS).
- .4 Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1.
- .5 Construction Safety Code, S-2.1, r.6 [2001].
- .6 Canada Shipping Act, and Navigable Waters Protection Act.

1.3 SUBMITTALS

- .1 Submit the documents required according to section 01 33 00 (Submittal Procedures).
 - .2 Submit to Departmental Representative, to ASP Construction (Association paritaire en santé et sécurité du secteur de la construction) and to CSST the site-specific safety program, as outlined in article 1.8, at least ten (10) days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work as planned. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site. The Contractor shall make the required changes before work begins.
 - .3 Submit once per month to Departmental Representative the site inspection sheet, duly completed.
 - .4 Submit to Departmental Representative within 24 hours one (1) copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
-

- .5 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
 - .6 Submit to Departmental Representative all material safety data sheets for controlled products to be used at the site at least three (3) days before they are to be used on the worksite.
 - .7 The Departmental Representative shall examine the health and safety plan prepared by the Contractor specifically for the worksite and shall provide the Contractor with observations within ten (10) of the receipt of the document. If needed, the Contractor shall revise his health and safety plan and resubmit no later than five (5) days after receipt of Departmental Representative observations.
 - .8 Review by Departmental Representative of Contractor's final health and safety plan for the worksite shall not be construed as an approval of such planning and in no way does it relieve the Contractor's overall responsibility for health and safety during construction.
 - .9 Submit to Departmental Representative copies of the training certificates required toward the application of the safety program, in particular:
 - .1 General construction site safety and health courses
 - .2 Safety officer certificates
 - .3 First aid in the workplace and cardiopulmonary resuscitation
 - .4 Work likely to release dust
 - .5 Lockout procedures
 - .6 Wearing and fitting of individual protective gear
 - .7 Safe handling of forklift truck
 - .8 Positioning work platform
 - .9 Work near water bodies with drowning hazard.
 - .10 Work involving third parties.
 - .11 Any other training called for by regulation or the safety program.
 - .10 Medical examinations: Where legislation, regulations, directions, specifications or a safety program require medical examinations, the Contractor shall:
 - .1 Prior to mobilization, submit to Departmental Representative certificates of medical examination for all concerned supervisory staff and employees concerned with the first paragraph of this article and who will be on duty when the site opens.
 - .2 Thereafter, submit without delay certificates of medical examination for any newcomers to the worksite and concerned with the first paragraph of this article.
 - .11 Emergency plan: The emergency plan, as defined in article 1.8.3, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
-

- .12 Notice of site opening: Notice of site opening shall be submitted to the *Commission de la santé et de la sécurité du travail* (CSST) with copy to the Departmental Representative before work begins. A copy of such notice shall be posted in full view at the site. At demobilization, a notice of site closing shall be submitted to CSST, with copy to Departmental Representative.
- .13 Work permits: the Contractor shall obtain all the municipal, provincial and federal permits that are required in the Contract. A copy of the permit application forms and of the permits actually delivered shall be submitted without delay to the Departmental Representative.
- .14 Engineering plans and certificates of compliance: the Contractor shall provide the CSST and the Departmental Representative with a copy of all plans and certificates of compliance signed and sealed by an engineer as required in the Construction Safety Code (S-2.1, r. 6) or by any other legislation or regulation or by any other clause in the specifications or in this contract. A copy of these documents must be on hand at the site at all times.
- .15 Certificate of compliance delivered by the CSST: The certificate of compliance is a document delivered by the CSST to certify that the Contractor is in good standing with the CSST, i.e., that he has paid out all the benefits concerning any given contract. This document must be provided to the Departmental Representative at work completion.

1.4 RISK ASSESSMENT

- .1 The Contractor must identify all hazards inherent to each task carried out at the site.
 - .2 The Contractor shall plan and organize the work so as to foster hazard abatement at the source, or mutual protection, so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falls is required, workers shall use a safety harness to CAN/CSA- Z-259.10-M90 requirements. Safety belts shall not be used as protection against falls.
 - .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work at hand.
 - .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or risk, the Departmental Representative may order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.
-

1.5 MEETINGS

- .1 A Contractor's representative who has decisional ability must attend all meetings at which site safety and health issues are to be discussed.
- .2 The Contractor shall set up a safety committee, and convene meetings in accordance with the Construction Safety Code.

1.6 REGULATOR REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the Work.
- .2 Comply with specified standards and regulations to ensure safe operations at worksite areas contaminated with hazardous or toxic substances.
- .3 Regardless of the publication date of standards indicated in the construction safety code, always use the version that is applicable.

1.7 SITE-SPECIFIC CONDITIONS

- .1 At the site, the Contactor must take into account of the following conditions:
 - .1 Risks involved in the transshipment, handling and closing-in or collision equipment and materials.
 - .2 Work in remote locations.

1.8 SAFETY AND HEALTH MANAGEMENT

- .1 Acknowledge and assume all the charges and obligations which customarily devolve upon a Principal Contractor under the terms of the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
 - .2 Develop a site-specific safety program based on hazard identification and apply it from the start of project until close-out is completed. The safety program must take into account all the information appearing in article 1.7 and must be submitted to all parties concerned, in accordance with the provisions set forth in article 1.3. At minimum, the site-specific safety program shall include:
 - .1 Company safety and health policy;
 - .2 A description of the work, total costs, schedule and projected workforce curve;
 - .3 Flow chart of safety and health responsibility;
 - .4 The physical and material layout of the site;
-

- .5 First-aid and first-line treatment standards;
 - .6 Identification of site-specific hazards;
 - .7 Identified to the tasks being carried out, including the preventive measures and the procedures for applying the latter;
 - .8 Training requirements;
 - .9 Procedures in case of accident/injury;
 - .10 Written commitment to comply with the prevention program, signed by all parties;
 - .11 A site inspection schedule based on the preventive measures.
- .3 The Contractor shall draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, as required in article 1.3. The emergency plan shall include:
- .1 Evacuation procedure;
 - .2 Identification of respondents (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge at the site;
 - .4 Identification of first-aid attendants;
 - .5 Training required for those responsible for applying the plan;
 - .6 Any other information needed, in the light of the site characteristics.
- .
- .4 A qualified person shall be available to operate the emergency equipment.
- .5 Establish emergency procedures in writing and in which the following information is stated. Ensure that all workers concerned by such procedures have undergone the necessary training and information for the purpose of applying the procedures.
- .1 A complete description of the procedures, including the responsibilities of the persons who are given access to the work area.
 - .2 The location of emergency equipment.

1.9 RESPONSIBILITIES

- .1 No matter the size of the construction site or the number of workers on the site, designate one (1) competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and likely to be affected by the work.

- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, federal and provincial regulations, applicable standards as well as the site-specific safety program, and comply without delay with any order or correction notice issued by the CSST (Commission de la santé et de la sécurité du travail).
- .3 Take all necessary measures to keep the site clean and tidy throughout the course of the work.

1.10 COMMUNICATIONS AND POSTING

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the site. As they arrive on site, all workers must be informed of the site specific safety program and of their rights and obligations. The Contractor must insist on workers' right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the site. The Contractor shall keep and update a written record of all information transmitted and the signature of all workers who received the information.
- .2 The following information and documents must be posted in a location readily accessible to all workers, if applicable :
 - .1 Notice of site opening;
 - .2 Identification of Principal Contractor;
 - .3 Company OSH policy
 - .4 Site-specific safety program;
 - .5 Emergency plan;
 - .6 Material safety data sheets (MSDS) for all hazardous material used at the site;
 - .7 Minutes of site committee meetings;
 - .8 Names of site committee representatives;
 - .9 Names of first-aid attendants;
 - .10 Action reports and correction notices issued by CSST.

1.11 UNFORESEEN CIRCUMSTANCES

- .1 Whenever a source of danger, not defined in the specifications or unidentifiable during the preliminary site inspection, arises as a result of the work or in the course of activities, take appropriate temporary measures to protect the workers and the public and notify the Departmental Representative, both verbally and in writing. The Contractor shall then modify or update the site specific safety program in order to resume work in safe conditions.

1.12 WORKPLACE
INSPECTION AND
CORRECTION OF
HAZARDOUS SITUATIONS

- .1 Proceed to workplace inspection complete the site inspection checklist at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Work interruption: Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption/resuming of work when deemed necessary or desirable in the interest of safety and health. This person should always act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 Without limiting the scope of articles 1.8 and 1.10, the Departmental Representative may order cessation of work if, in his/her view, there exist hazards or threats to the safety or health of site workers or the public, or to the environment.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used

End of section

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

1.2 PRIORITIES

- .1 In addition to the requirements of this section, the Contractor must refer to mitigation measures and to particular requirements (period of exclusion or other) just as licenses (LPEN, LP, etc.) required in the Assessment of Environmental effects in Appendix. In case of a contradiction between specifications and the Assessment of Environmental effects or licence, the most constraining measure will be applied.

1.3 FIRES

- .1 Fires and burning of rubbish on site not permitted.

1.4 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3 Grade and classify all dredged materials to manage their future utilization in breakwater.
- .4 Avoid storing materials in large quantities and over long periods.
- .5 All necessary installations for the grading and classification of reusable materials must be planned out on work site and in a safe and predetermined area. Submit description of storage sites and obtain Departmental Representative's approval as well as the owners of site if applicable.
- .6 Contractor shall gradually dispose of non-reusable material from demolition off work site to an authorized site.
- .7 Contractor shall submit a copy of official authorization and permits prior to seek Departmental Representative's authorization to remove waste materials from work site.
- .8 Dispose of non-reusable solid waste according to Québec's regulation and with Québec's Soil Protection and Rehabilitation of Contaminated Sites Policy.

1.5 POLLUTION CONTROL

- .1 Materials used shall be inert and exempt from contaminants.
- .2 Prevent fine materials and other extraneous materials from contaminating air and water beyond work site.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Control emissions from equipment and plant to local authorities emission requirements.
- .5 Use machinery in good operating condition to avoid grease, oil or fuel leaks. Submerged equipment parts shall be clean and free of leaks.

- .6 Perform service and verifications before arrival at site. Ensure there are no fuel, oil or grease leaks, and silencer must be in good condition. Repair non-compliant equipment as rapidly as possible (noise or leaks).
- .7 Immediately recover any contaminant spill in the environment and dispose of it in accordance with applicable legislation.
- .8 Maintain absorbent materials on site at all times for rapid intervention in case of hazardous spill. Know how to use emergency equipment in case of accidental spill. Report any oil spill or other environmental incident to Departmental Representative and authorities having jurisdiction. Recover hydrocarbons and contaminated soil and dispose of in conformance with applicable legislation.
- .9 Submit emergency a specific plan related to hazardous spill, with a list of all contributors with their phone number, considering the remote location of worksite.
- .10 Keep on site suitable emergency equipment in case of an accidental spill and ensure the appropriate use of it.
- .11 Keep on site, near the work area and near the supplying zone established, an emergency spill response kit. The emergency spill response kit shall contain absorbent material in adequate quantities to remove petroleum from site.
- .12 In the event of a hydrocarbons spill or other hazardous material, the Contractor must advise Departmental Representative and authorities having jurisdiction mentioned in the emergency plan. Report immediately the situation to Environment Canada Emergency services (1-866-283-2333), Environment Emergency of Québec (1-866-694-5454) for an on land spills and to Canadian Coast Guard- Marine Accidental Spill Incidents (1-800-363-4735).
- .13 Wasted oils and other contaminated wastes shall be managed in compliance with effective regulation. This included storage at site, transportation and elimination.
- .14 Any hazardous waste generated on the work site will have to be conveyed to a well-authorized disposition site by MDDELCC.
- .15 Hazardous waste storage and transport will have to be done in accordance with the regulation in force in order not to contaminate the environment.
- .16 Prior to conveying hazardous waste from work site, the Contractor shall obtain the Departmental Representative authorization by showing a copy of all licenses obtained from the owners or hazardous waste disposal site authorities

1.6 TRANSPORT OF MATERIALS

- .1 Materials may be transported on public roads closer to construction site from Monday to Saturday unless notified otherwise by the authorities having jurisdiction. Transport is prohibited on Sundays and public holidays.
- .2 Materials may be transported through the city between 7:00 a.m. and 7:00 p.m. if applicable. Transport outside these hours is prohibited.
- .3 Ensure proper operation of trucks and boats and barges used. Any means of transport creating sound levels that Departmental Representative deems to exceed standards shall cease transporting materials or be repaired or modified to be made acceptable.
- .4 Contractor shall use adequate signalization and co-operate with municipality, Departmental Representative and other authorities having jurisdiction to minimize the impact of transportation on the daily lives of residents in area adjacent to construction site and on the island of Harrington Harbour.
- .5 Use a sheet to cover granular material during transportation.

- .6 Maintain the roads used in good condition at all times and take the necessary measures to ensure they can be safely used and crossed by other users.
- .7 Upon work completion, promptly restore the roads and natural shorelines to a condition that is at least equal to their original state (including vegetation).
- .8 Use clean equipment and machinery and in good working order. Machinery shall not leak fuel, oil or grease.

1.7 PROTECTION OF LIFE QUALITY

- .1 Safety
 - .1 To ensure safety near the storage area, Contractor must secure the site and display adequate information and signage for workers and residents.
 - .2 Contractor shall maintain site and surrounding area free of debris that could cause accidents.
 - .3 Contractor shall restrict access to the site to minimize the risk of accident.
- .2 Tranquility
 - .1 Contractor shall carry out noisy work during normal working hours from Monday to Saturday, from 7 am to 19 pm, avoiding Sundays and holidays.
 - .2 Equipment in good condition and as quiet as possible should be used.
 - .3 Works should be conducted in a minimum timeframe so as to minimize the duration of the nuisance.
 - .4 Contractor must plan works so to reduce the sound effects on the environment and to comply with municipal regulations.

1.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES AND CODES

- .1 Work shall meet applicable requirements of the latest edition of the standards of the Canadian Government Specifications Board (CGSB), the Canadian Standards Association (CSA), the National Building Code of Canada (NBC), the American Society for Testing and Materials (ASTM), the Canadian Standard Association (CSA), the American Concrete Institute (ACI), Cahier des charges et Devis généraux (CCDG) by the Ministère des Transports du Québec (MTQ), and other standards and codes herein referred to. Use the latest edition of amendments issued up to tender closing date. In case of conflict or discrepancy among applicable documents, the more stringent requirements shall apply.
- .2 Where conflict arises in the course of work, the strictest standards shall apply.
- .3 It should be understood at all times from the above that where this specification refers to standards, the latest issue is concerned regardless of indications herein.
- .4 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 LAWS, REGULATIONS AND DECREES

- .1 Contractor shall conform to all rights and privileges of others, and comply with all federal, provincial and municipal laws, regulations and decrees. The Contractor ensure that his employees, in law or in fact and his subcontractors abide by same.
- .2 Required permits and approvals shall be obtained by the Contractor before work is undertaken.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

1.4 PERMITS, FEES AND TAXES

- .1 Contractor shall give all notices, obtain and pay all fees and construction permits for the demolition and for construction, and for all other services, as required by the authorities having jurisdiction.
- .2 Contractor shall be responsible for all damage and costs resulting from default to obtain these fees and permits.
- .3 Contractor shall include in the total amount of his tender all applicable taxes, but will exclude the Federal tax for Goods and Services tax (GST) and the Québec Sales Tax (QST/TVQ).

PART 2 – PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

End of section

PART 1 - GENERAL

1.1 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative may order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and reconstruction.

1.2 INDEPENDENT
TESTING/INSPECTION
AGENCIES

- .1 Independent Inspection/Testing Agencies will be hired by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Employment of inspection/testing agencies does not relax Contractor's responsibility to perform Work in accordance with Contract Documents.
- .3 Where defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.3 ACCESS TO
CONSTRUCTION WORK
SITE

- .1 Allow inspection/testing agencies access to Work, and to off-site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence in order to avoid delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Where applicable, make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.6 REPORTS

- .1 Submit four (4) copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish requested test results and mix designs.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.8 MILL TESTS

- .1 Submit mill test certificates as requested or required in specification Sections.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

- 1.1 RELATED SECTION .1 Section 01 74 11 - Cleaning
- 1.2 INSPECTION AND DECLARATION OF SUBSTANTIAL ACHIEVEMENT .1 Contractor's Inspection: Contractor and Subcontractors shall proceed to inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.2 Request Departmental Representative's inspection.
- .2 Departmental Representative inspection: Departmental Representative will perform inspection of Work with Contractor in attendance to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3 Work completion: submit written statement certifying that the following have been performed:
.1 Work has been completed, inspected and deemed in compliance with Contract Documents.
.2 Defects and deficiencies identified during inspection have been corrected.
.3 Work is complete and ready for final inspection.
.4 The personnel designated by the Departmental Representative was trained as required on the operation of equipment and systems.
- .4 Final Inspection: when above steps are completed, request final inspection of Work by Owner, Departmental Representative and Contractor jointly. If Work is deemed incomplete by Owner and Departmental Representative, complete outstanding items and request re inspection.

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

- 3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 77 00 – Closeout procedures

1.2 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Furnish evidence, if requested, for type, source and quality of products provided.
- .3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.3 GENERAL

- .1 Arrange, correlate, cross-reference, and establish the table of contents of each manual to be provided at work completion.
- .2 Submit the operating and maintenance manual to the Departmental Representative six (6) weeks prior to project provisional acceptance.
- .3 Submit three (3) copies of the manual in French and two (2) copies in English.
- .4 Arrange data and information in the same numerical sequence as that of contract document sections.
- .5 Mark each section with a celluloid-covered tab fastened to a rigid paper separator.
- .6 Type base lists and any comments or remarks.
- .7 Manufacturers' drawings, diagrams and publications shall be legible.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

.1 Not Used.

End of section

Part 1 General

1.1 SCOPE

- .1 This section specifies the production of stone, including the decision-making process for acceptance of the supply sources of stone by the Departmental Representative. Also included are the tasks pertaining the quality control and to quality assurance. The Contractor is responsible for Quality Control (QC) and the Departmental Representative for the Quality Assurance process (QA).

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 45 00 – Quality Control

1.3 REFERENCES

- .1 The most recent issues of the standards listed below are integral to this section of the specifications within the indicated boundaries.
 1. American Society for Testing and Materials (ASTM)
 2. ASTM C88: Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 3. ASTM C127: Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
 4. ASTM C136: Sieve Analysis of Fine and Coarse Aggregates
 5. ASTM C295: Petrographic Examination of Aggregates for Concrete
 6. ASTM D4992: Evaluation of Rock to be Used for Erosion Control
 7. ASTM D6928: Standard Test Method for Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus
 8. ASTM D7012: Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

1.4 SUBMITTALS

- .1 The following information and data shall be submitted to the Departmental Representative as required in Section 01 33 00 – Submittal Procedures.
 - .1 Information concerning the supply source of stones
 - .1 The Contractor shall provide the information listed below for all the proposed supply sources within fifteen (15) working days following the Notice of Acceptance of the offer:
 - .1 Name and location of the quarry;
 - .2 Areas and lifts to be worked in the quarry;
 - .3 Specific geological stratum or strata to be used;

- .4 Laboratory test results representative of the quarry areas and strata to be worked (refer to table 1 for testing requirements and criteria);
 - .5 List of completed maritime engineering projects carried out with the same stone.
- .2 Stone control plan and staffing
- .1 The contractor shall submit in writing a control plan for stones within ten (10) working days following the granting of the contract. The plan shall describe the means, methods and equipment to be provided, as well as the inspection and follow-up program during production, handling, transportation and placement of stones in a manner which shall result in satisfactory quality of in-place stone construction.
 - .2 The control plan shall include the name and the specifications of the supervisor and a licensed professional geologist. The specific qualifications and functions required of these persons are described in paragraph 1.8 below.
- .3 Pre-production stones
- .1 Within twenty (20) working days following the granting of the contract, the Contractor shall submit a set of pre-production stones for evaluation by the Departmental Representative. At least 25 pre-production stones shall be furnished for each stone category to be produced at each intended supply source.
 - .2 The specific requirements for pre-production stones are described in paragraph 1.9 below.
- .4 Review of the stone control plan and staffing
- .1 Should the Contractor choose to propose a review of the control plan for stones, he shall submit the new version of the plan at least five (5) days before its implementation date and he revised control plan shall not be implemented before the Departmental Representative has had time to examine the issues.
 - .2 Proposed changes in the staffing are also subject to assessment. Revisions required by the Departmental Representative in the control plan for stones and staffing shall follow the procedure described elsewhere in this section.
- .5 Stone control plan reports
- .1 The Contractor shall keep daily records of all work carried out with respect to the approved control plan for stones. These reports shall be made available for examination to the Departmental Representative upon request. In addition, at the end of each week, the records shall be gathered and submitted weekly to the Departmental Representative.
 - .2 Daily reports shall be drafted daily by each inspector and they shall include the following information data:
 - .1 Inspector's name;
 - .2 Identification of the stone handling equipment in all the phases of the work and names of machinery operators who prepare the stone for inspection;

- .3 Date of inspection of the stone;
- .4 Weather conditions, including temperatures;
- .5 Weather conditions and date at which the stone was removed from the working face of the quarry; date of blasting and blasting details as the case may be;
- .6 Blasting location and strata from which the stone are blasted in the quarry (horizontally and vertically);
- .7 Color coding and other symbols and markings used by the inspector with aerosol paint to identify the stones individually sorted (and not mechanically sorted), and the rejected stones;
- .8 Distribution of the approximate quantity of accepted and rejected stones processed during the day for the project, by category;
- .9 Summary of main reasons for stones rejection during the day;
- .10 Total quantity of stones shipped from the supply source at date of report, for each category.

.6 Gradation testing

Submit all gradation testing for review, including testing data sheets, calculations and testing results in chart form.

1.5 TERMINOLOGY

.1 The expressions below are defined as follows:

- .1 Aspect Ratio (l/d) – Ratio of the length (l) of the stone to its thickness (d) when measured over three mutually perpendicular axes. Stone length (l) is defined as the longest distance between two points on the stone (i.e., diametrically opposite corners of the stone block). Stone thickness (d) is defined as the minimum dimension between any two opposite faces of the stone.
- .2 The term « ton » (t) refers to the metric ton (1 t = 1 000 kg).

1.6 QUALITY CONTROL

.1 The control plan for stones shall be included to the Contractor's general quality control (QC) program as required in Section 01 45 00.

1.7 QUALITY CONTROL STAFFING

.1 General

- .1 The Contractor shall assign a supervisor in charge of the overall process governing stone control, as well as qualified inspectors at the quarry and at loading point. Further, the Contractor shall commission a licensed professional geologist to assist the supervisor as needed throughout the duration of the project. The staff shall ensure that all the stone produced, delivered at the worksite and placed in the structure is in accordance with the requirements in the contract documents and with the specifications.

.2 Supervisor's qualifications and duties

- .1 The supervisor is responsible for implementing all the elements in the control plan for stones. He has at least two years of specialized experience in the inspection and assessment of armour stone for marine projects. The experience must have been acquired in the quality assessment of the type and size of stone involved in the project at hand. Where the Contractor obtains the stones for his project from a subcontractor, the supervisor shall not be an employee of the latter.
 - .2 The supervisor shall be responsible for the implementation and fulfillment of the control plan for stones, including the management, control, assessment of the work performed by all the inspectors. He shall provide qualified inspection personnel at all times and replace any person whose performance is unsatisfactory.
 - .3 The supervisor is responsible for the quality of all the stone produced.
- .3 Geologist's qualifications and duties
- .1 The geologist shall be qualified and licensed and have at least one year of practical experience in the inspection and assessment of armour stone. He shall assist the supervisor in selecting the stone supply source; this includes visual inspection and petrographic assessment (ref. Table 1), identification of acceptable and unacceptable rock zones and layers at the quarry, and the selection of pre-production stones.
 - .2 Further, the geologist shall remain involved during the stone production period if the ongoing QC and QA (quality control, quality assurance) activities indicate that the quality of stones supplied does not comply with the requirements or is questionable; do as instructed by the Departmental Representative.
- .4 Inspectors' qualifications and duties
- .1 Inspectors shall have at least one year of relevant experience to production of stone to carry out in a capable and independent manner the tasks indicated below under the supervisor's general foremanship.
 - .1 Participate in the selection of pre-production stones and in the evaluation of stockpiled stones.
 - .2 Hold a clear and legible daily record of their activities and observations in a format to be approved by the Departmental Representative. Draft daily inspection reports and submit them as required.
 - .3 Proceed to visual examination of stones to assess whether they meet the quality criteria herein described. The inspection shall focus on the quality of the stone, fractures, stone geology and detrimental characteristics likely to cause deterioration and fragmentation of the stones in smaller pieces after placement in the structure.
 - .4 Clearly mark every acceptable stone weighing more than four (4) tons with spray paint using a colour and/or symbol system approved by the Departmental Representative. Unless otherwise directed, each stone of more than four (4) tons shall be suitably marked on three mutually perpendicular sides. Inspection duties also include identifying and marking stones that do not meet the acceptance criteria either for size, quality and/or shape. Mark rejected stones with an X in red aerosol paint on three (3) mutually perpendicular sides.

- .5 Measure each stone over three (3) mutually perpendicular sides and provide an estimation of its weight using the unit weight of the type of rock at hand per unit of volume measured.
- .6 Proceed to regular checks of estimated weights against the scaled weights using a weight measurement method approved by the Departmental Representative.
- .7 Build and maintain separate stockpiles for each category of stone.
- .8 Ensure that the rejected stones are stockpiled in the « reject » pile or that they are removed without delay from the site after being marked. Rejected stones shall always be segregated from accepted stones.
- .9 Carry out granulometry and assessment of stones as follows: measurement of size, estimation of weight and dimensional ratio. Where necessary, make appropriate changes in the production process and ensure that the requirements for granulometry and shape are met as specified herein.
- .10 If the stones are shipped by barge, ensure that stone categories are segregated during loading and unloading; compile the tonnage of categories of stones for each barge load before releasing the shipment.
- .11 Carry out regular verifications aimed at ensuring that the gages and other weighting devices fitted on the equipment accurately weight the stones for granulometry testing and quality control purposes.

1.8 PRE-PRODUCTION STONE

- .1 Preparation
 - .1 The Contractor shall provide a collection of pre-productions stones within twenty (20) working days from the Notice of Acceptance of the offer. The supervisor shall select the pre-production stones for evaluation by the Departmental Representative. Pre-production stones shall be arranged in rows at the supply source.
 - .2 At least twenty-five (25) pre-production stones shall be provided for each stone category to be produced from each supply source.
 - .3 They shall be typical of the areas, geologic units, faces and lifts in the quarry of origin where stone is to be produced; and typical of the stone quality to be produced and of the range of sizes specified for that category.
- .2 Inspection of the pre-production stones
 - .1 The Contractor's supervisor and inspectors shall accompany the Departmental Representative in his inspection of the stones. The Contractor shall insure that the stones are not covered with dust or mud and he shall provide the means required to turn the stones to facilitate the Departmental Representative's inspection of the pre-production material.
 - .2 The departmental Representative shall mark the unsuitable stones with an X in red over three (3) mutually perpendicular sides. If twenty percent (20%) or more of the stones in a collection of pre-production stones are deemed unsuitable, The Contractor shall replace the rejected stones and another inspection shall ensue.

Should, after two failed attempts, the Contractor be unable to provide a complete and adequate collection of pre-production stones, the quarry shall be disqualified for the work of this contract. The Contractor shall then be invited to indicate a new supply source for approval.

.3 The Contractor is responsible for all costs incurred in the replacement of collected pre-production stones or changes in the supply source. No extension of the execution date set for this contract shall be granted due to changes in the stone supply sources.

.3 Maintenance of pre-production stone as examples

.1 Acceptable pre-production stones as well as typically unsuitable stones as established by the Departmental Representative shall remain at the quarry as examples (for the quality, size and shape requirements) throughout the stone shipment period of this contract.

.2 Each and all pre-production stones shall be clearly graded with its weight marked on the stone.

1.9 DECISION PROCESS FOR ACCEPTING STONE SUPPLY SOURCES AND STONE CONTROL PLAN

.1 The Departmental Representative reserves the right to conduct independent investigations and evaluations, where necessary, including other stone quality evaluations as shown in Table 1, in order to verify that compliant material may be produced from the proposed supply sources. Additional testing may be carried out on stone samples selected by the Departmental Representative and paid for the Departmental Representative.

.2 The Departmental Representative shall decide on the acceptance or non-acceptance of the stone supply sources proposed by the Contractor, and on the control plan for stones and staffing, based the following information:

.1 Review of the information and data on the supply sources and control plan for stones provided by the Contractor (ref. paragraphs 1.5.1. and 1.5.2).

.2 Visual inspection of the pre-production stones (ref. paragraph 1.9).

.3 Evaluation of the information and data regarding the quality requirements prescribed for the stones (ref. paragraph 2.3 and Table 1), the stone gradation and shape (ref. paragraph 2.4).

.4 Review of results of additional laboratory testing if need be (ref. paragraph 1.10.1).

.3 The Departmental Representative will provide a determination of acceptance or non-acceptance of the stone supply sources proposed by the Contractor, on the stone control plan and staffing within then (10) working days following his inspection of the pre-production stones or the reception of additional laboratory test results whichever comes last.

.1 If the stone supply source and the stone control plan and staffing are deemed acceptable, the Contractor may then proceed with the production or materials providing they comply with the accepted pre-production stones.

.2 If the control plan for stones is rejected, the Contractor shall prepare and submit a new control plan – which may involve new staff, and obtain the approval of the Departmental Representative before proceeding with the production of stones for the work of this project. No further payment shall be issued for the work until an

acceptable control plan is submitted to the Departmental Representative. The Contractor is responsible for all the costs involved in preparing a new plan. Moreover, no extension of the execution date set for this contract shall be granted due to changes in the control plan for stones.

- .3 If the supply sources for stones are not approved, the Contractor shall find and indicate new supply sources and proceed to sampling and testing as required toward their approval by the Departmental Representative. All costs incurred by a change in supply sources shall be paid for by the Contractor. Finally, no extension of the execution date set for this contract shall be granted due to changes in the supply sources for stones.
- .4 No extension of any milestone or deliverable due dates will be granted to compensate for the time spent by the Departmental Representative on the decision process aimed at accepting or declining the proposed supply sources.

1.10 QUALITY ASSURANCE

.1 General

- .1 Quality assurance (QA) activities are conducted by the Departmental Representative. Quality assurance activities aim at providing independent observations on the compliance of stones with the requirements of this section before stones are shipped to the worksite. QA activities shall in no way relieve the Contractor of his obligations.
- .2 The Contractor shall provide the machinery and the operators to turn and handle the unpromising stones that must be submitted to another evaluation by the Departmental Representative.
- .3 Where the QA activities conducted by the Departmental Representative uncover non-compliance with the requirements of this section, the Departmental Representative will reject the non-compliance stones. Materials rejected at the source shall immediately be marked (with an X over three mutually perpendicular faces), segregated and removed from the storage area. In addition, materials rejected on the project site shall be removed promptly and excluded from the measurement and payment process. The removal of unsuitable stones shall be at Contractor's expense.
- .4 If, during his QA activities the Departmental Representative finds that the stone furnished does not meet the quality requirements or seems questionable, additional samplings and laboratory tests may be required. Stone sampling and the required testing shall be carried out as directed by the Departmental Representative. In this instance, the Contractor shall pay all costs involved in the additional sampling and laboratory testing of stones.
- .5 Persistent non-compliance shall be sufficient reason to reject the control plan for stones as described in Section 1.10.3.2., and/or to reject supply sources as provided in Section 1.10.3.3.

.2 Gradation testing

- .1 The departmental Representative may conduct gradation evaluations for quality assurance purposes either at the source or at the worksite, in addition to the testing

required from the Contractor. Quality assurance gradation evaluations shall be conducted at intervals determined by the Departmental Representative. The latter shall collect random stone samples for testing. Where the QA gradation test results or the observation of the stones indicate noncompliance with the specifications, the production procedures shall be modified and further gradation testing (both QC and QA) shall validate the corrective measures implemented.

- .2 The Contractor shall provide the Departmental Representative with all the loaders, certified scales, machinery operators and labour as required to collect the samples, measure (or weigh) the stones individually and to weigh the whole sample.

Part 2

2.1 GENERAL

- .1 All the stones shall comply with the entire range of requirements herein set forth. The Departmental Representative may, at any time during construction and throughout the project, refuse materials at the source or the worksite if they do not meet requirements. Materials delivered to the worksite and rejected either in a stockpile or after placement in the work, shall be removed at Contractor's expense.
- .2 In this project, the control plan and QC & QA activities shall systematically apply throughout both the quarrying and construction phases.

2.2 STONE SOURCES

- .1 The Contractor is solely responsible for ensuring that the selected supply sources will be able to meet the delivery schedule and produce stones of the required quality in sufficient quantities for the project.
- .2 If, as construction activities unfold, the Contractor is unable to provide acceptable stones in sufficient quantities from the original supply source, he may request an authorisation to use another source. All the expenses resulting from a change in the supply sources, including the required sampling and testing, shall be at Contractor's expense. In addition, no extension of the execution date set for this contract will be allowed.

2.3 STONE QUALITY REQUIREMENTS

- .1 All stone shall be highly resistant to weathering, deterioration and disintegration under freeze-thaw cycles and exposure to water, and of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. Stone shall be a rough broken stone from a quarry. Stone shall be durable, sound and free of cracks, seams and other defects that would tend to increase deterioration from natural causes or result in breakage during handling and/or placement. Inclusions of dirt, sand, clay, shale, of quartz or mica, pegmatite, oil or oil-stained stones, rock fines or any organic or other delirious material will not be permitted, including iron sulphide veins or nodules.
- .2 Stones

- .1 Stone from the Magdalen Islands will not be accepted. Conglomerates materials WILL NOT be acceptable for this project, regardless of the fact that they comply with the other acceptance criteria. Only quarry-run material for the Magdalen Islands will be acceptable
- .2 Categories to be produced are as follows :
 - .1 4 to 6 metric tons
 - .2 2 to 3 metric tons
 - .3 100 to 200 mm
 - .4 200 to 400 mm
 - .5 400 to 750 mm.
- .3 Stone sampling and testing method
 - .1 References concerning testing methods are listed above in Section 1.3 - References
 - .2 Stone samples used in laboratory tests shall be typical of the lithologic unit of each category of stone proposed for use in the work of this project.
- .4 Reuse of stone excavated from the existing secondary breakwater
 - .1 Stone excavated from the existing secondary breakwater shall be reused in the work of this project. The original categories of the stone and the new categories formed from excavated stone are shown on Section 01 41 19 Excavation and Preparation of the Secondary Breakwater.
 - .2 The Contractor shall dispose of the rejected and/or surplus materials as instructed in Section 02 41 19 and to the relevant requirements in Section 01 35 43 – Environmental Protection and Section 01 41 00 – Regulatory Requirements.

2.4 STONE GRADATION AND SHAPE

- .1 The methods used for production, transportation and placement must be adjusted to the needs in order to ensure that the materials placed in the final stage are within the prescribe range for weight. Stones must therefore undergo gradation testing and shall not display discontinuities or defects in their individual size ranges.
 - .1 For gradation testing, a random sample of stones must be collected weighing at least 25 times the average weight of stones in the category. Each individual stone in the sample shall be measured over three (3) mutually perpendicular axes. The dimensional ratio and the weight of each stone shall be estimated using the unit weight of the type of rock at hand per unit of volume measured and shall be recorded in a table. In addition, the weight of the whole sample shall be measured. This information is used to produce a “correction factor” to adjust the estimated weight of stones with regard to their actual weight. Each stone in the sample may also be weighed individually. With this data, a gradation chart can be established for the sample.

Tableau 1 – Required stone quality testing – Methods and acceptance criteria

Test name	Test method	Acceptance criteria
		Stone from outside Magdalen Islands
Field observations / Visual Inspection / Assessment		
Field examination ¹	ASTM D4992-07	No conglomerates No delirious materials; good to excellent quality for intended use
Petrographic examination ²	ASTM C295-03	No delirious materials; good to excellent quality for intended use
Watering grade	Visual	1A – fresh, unweathered rock 1B – faintly weathered rock (staining on major discontinuity surfaces)
Laboratory testing		
Bulk specific gravity, SSD	ASTM C127-07	≥2.65
Water absorption ³	ASTM C127-07	≤0.5%
Water resistance micro-Deval ⁵	ASTM D6928-06	≤15
MgSO ₄ Soundness	ASTM C88-05	≤1.5% loss after 5 cycles
Petrographic examination ²	ASTM C295-03	No delirious materials; good to excellent quality for intended use

Notes :

- 1 The field examination shall include the preparation of a written report that includes a summary of the quarry and proposed quarry development plan as per ASTM D4992-07, including : general lithology, geologic unit and age, source homogeneity, stratigrafic faces; metamorphic and weathering phases; dip, strike and thickness of the bedding; proposed blasting procedure and expected curing time.
- 2 Petrographic examination shall be repeated before AND after the MgSO₄ soundness testing. Petrographic examination shall be summarized in a written report that includes the presence of micro-fractures and/or signs of induced stress (and therefore possible stress release – ref. paragraph 3.2) that may be of concern for the proposed use.
- 3 Water absorption test shall be repeated on five (5) different pieces of rock.
- 4 Compressive strength test shall be repeated on three (3) different pieces of rock.
- 5 Wear resistance test shall be repeated on two (2) different pieces of rock.

- .2 Although it is required that an adequate spreading over the entire range of sizes be obtained each category, at least 50% of the stones – in numbers, shall be heavier than the average weight of the stones.
- .3 Stones shall display an angular or blocky shape with a maximum 3/1 dimensional ratio (l/d).
- .4 In each category, only ten percent (10%) of the stones – in numbers, may display a dimensional ratio in excess of 2,5/1.
- .5 Stones with a dimension ratio comprised between 2.5 and 3.0 shall never be placed flat or under water level.
- .6 Stones of a category have to be uniformly divided into size in all breakwater, in order to avoid creating sections of breakwater with concentration of the same size of stone inside a given category.
- .7 The Contractor shall perform gradation testing on pre-production and production stone and report the results as indicated in Table 2.

2.5 FREQUENCY OF STONE INSPECTION AND TESTING

- .1 The minimal frequency of stone quality testing, visual inspections and gradation testing required in the Contractor’s control plan for stones is indicated in Table 2.

Table 2 – stone quality assessment, visual inspection and granulometric testing frequency

Stone quality testing	Visual inspection	Gradation testing
Pre-production testing for each source and at each geologic in the quarry (cf Table 1)	Continuous	Sample at every 3000 tons for each category (cf paragraph 1.9)

Part 3 EXECUTION

3.1 STONE CURING AND WINTER QUARRYING OPERATIONS

- .1 The Contractor shall conduct curing operations on freshly extracted stone to permit it to release stored energy and moisture and to ascertain that the stone will not fracture during the energy release and drying out phase. Stones shall be temporarily stockpiled at the quarry for a minimum period of ten (10) consecutive calendar days without any occurrence of freezing weather (0 C and over) before being inspected and approved for shipment to the worksite. Stones can be produced in winter, but final inspection and approval will not be done before spring. This requirement may be modified by the Departmental Representative depending on the quarry and the ongoing QC/QA activity results.
- .2 If the stone is quarried during freezing weather (0 C and lower), the excess water retained in the rock could cause the rock to split. Each quarry selected by the Contractor for the production of breakwater stone shall be evaluated individually in order to determine the additional curing time without frost applicable as specified in article 3.1.1. Further, the following guidelines apply:

.1 Sedimentary rock quarries

- .1 When the ambient temperature at the quarry reaches 0 C on average over 24 hours for three (3) consecutive days, this shall be considered as the date of interruption. May 15 will herein after be considered as the restart date. Stone shall be blasted at least two (2) days before the interruption date or special procedures must be followed.
- .2 Stone blasted within two (2) weeks of the interruption date will be accepted only if suitable guaranteed storage is provided and maintained by the Contractor in order to allow their inspection after the restart date. Special stockpiling and handling techniques must be used to produce suitable stones after quarry cut-off day or during freezing weather.
- .3 It is the Contractor's responsibility to establish a production schedule and to manage the operations in order to produce sufficient quantities of suitable stones during the project.

.2 Igneous and metamorphic rock quarries

- .1 There are no special restrictions for quarrying or drying operations due to weather conditions. Nevertheless, a ten-day (10) curing period is required after blasting as required in article 3.1.1.

3.2 QUALITY CONTROL DURING PRODUCTION

- .1 The Contractor shall carry out Quality Control activities throughout the stone production and placement period as required in this section and in section 01 45 00 – Quality control.
- .2 The weighing of stones, or their re-measurement, shall be carried out to ascertain the calculated weight either when the Departmental Representative questions the size of stones or when the inspector deems it appropriate.
- .3 Drop tests shall be carried out when the Departmental Representative questions the quality or integrity of stones or when the inspector deems it appropriate. Drop tests shall be carried out as follows:
 - .1 Visual inspection of the stone on all sides; marking/recording of all existing cracks;
 - .2 Lift the stone to 3 m and drop it onto a rigid surface (bedrock or stone of similar size);
 - .3 Visual inspection of the stone on all sides to identify existing and/or developing cracks;
 - .4 Repeat at least three times as directed by the Departmental Representative;
 - .5 The stone is acceptable for the intended purpose if existing cracks have not open and no new cracks have developed.
- .4 The Contractor is notified that adverse weather conditions (rain, snow, ice, frost and mud) may hide or conceal defects that would otherwise have been identified. Winter conditions may postpone the required inspection of stones until the next Spring. Stones shall not be shipped to the worksite before their inspection.
- .5 Except where gradation tolerances allow it, any broken or cracked stone, stones that do not meet gradation standards and stones that are not correctly placed in the structure shall be removed and replaced with satisfactory stones. This corrective measure is at Contractor's

expense. Rejected materials shall be removed from the worksite without delay. Such materials are excluded from measurement and payment.

3.3 TRANSPORT AND TEMPORARY STORAGE

- .1 The Contractor shall take charge of the transportation and storage of the stones and ensure that stockpiles are not contaminated with dirt or other substances; he shall also inhibit size segregation of stockpiled material.
- .2 The Contractor shall implement measures to prevent introduction of invasive alien species in accordance with Section 01 35 43 – Environmental Procedures
- .3 The storage of stones after shipment from the quarry and before permanent placement into the structure shall be submitted to the Departmental Representative for approval. Underwater storage of stones is not authorized.
- .4 The storage site for stones must be at a maximum distance of 3 km from fishing harbour.
- .5 The agreement for storage must be of a monthly charge and valid until November 2016. The agreement must be terminated at no penalty charge if the stone is recovered before November 2016.

END OF SECTION